

What is claimed is:

1. A fenestrated endovascular graft kit, comprising:  
a fenestrated endovascular graft, including:  
a tubular graft body having a graft wall surrounding a central lumen, and  
a multiplicity of fenestrations through the graft wall,  
a graft delivery catheter for implanting the fenestrated endovascular graft within a patient's blood vessel; and  
a guidewire for forming the opening in the graft wall.
2. The fenestrated endovascular graft of claim 1, further comprising:  
at least one expandable stent connected to the tubular graft body.
3. The fenestrated endovascular graft of claim 1, wherein the fenestrations through the graft wall are expandable.
4. The fenestrated endovascular graft of claim 1, wherein the fenestrations through the graft wall are in the form of slits oriented longitudinally with respect to the tubular graft body.
5. The fenestrated endovascular graft of claim 1, further comprising:  
a grommet insertable into an opening formed in the graft wall.
6. The fenestrated endovascular graft of claim 1, further comprising:  
a sidebranch graft connectable to an opening formed in the graft wall.
7. The fenestrated endovascular graft of claim 6, wherein the sidebranch graft has a flange configured to form a fluidtight connection to the opening in the graft wall and an expandable anchor configured to form a fluidtight seal with a branch vessel.
8. The fenestrated endovascular graft of claim 1, wherein the guidewire includes a rearwardly-facing piercing element.

9. The fenestrated endovascular graft of claim 8, wherein the kit further comprises a catheter for introducing the guidewire into the patient's blood vessel.

10. A fenestrated endovascular graft kit, comprising:

a fenestrated endovascular graft, including:

an outer tubular graft body having a graft wall surrounding a central lumen and a multiplicity of fenestrations through the graft wall; and

an inner tubular graft body sized and configured for placement within the central lumen of the outer tubular graft body, the inner tubular graft body having a graft wall surrounding a central lumen and a multiplicity of fenestrations through the graft wall

a graft delivery catheter for implanting the fenestrated endovascular graft within a patient's blood vessel; and

a guidewire for forming the opening in the graft wall.

11. The fenestrated endovascular graft of claim 10, further comprising:

at least one expandable stent connected to the outer tubular graft body or the inner tubular graft body.

12. The fenestrated endovascular graft of claim 10, wherein the fenestrations through the outer tubular graft body and the fenestrations through the inner tubular graft body are expandable.

13. The fenestrated endovascular graft of claim 10, wherein the outer tubular graft body and the inner tubular graft body are permanently attached to one another.

14. The fenestrated endovascular graft of claim 10, wherein the outer tubular graft body and the inner tubular graft body are separable from one another.

15. The fenestrated endovascular graft of claim 10, wherein the fenestrations through the outer graft wall are configured to seal against the inner graft wall and the fenestrations through

the inner graft wall are configured to seal against the outer graft wall when the inner tubular graft body is placed within the central lumen of the outer tubular graft body.

16. The fenestrated endovascular graft of claim 10, wherein the fenestrations through the outer graft wall are in the form of slits oriented longitudinally with respect to the outer tubular graft body and wherein the fenestrations through the inner graft wall are in the form of slits oriented circumferentially with respect to the inner tubular graft body.

17. The fenestrated endovascular graft of claim 10, further comprising:  
a grommet insertable into an opening formed through the outer graft wall and the inner graft wall.

18. The fenestrated endovascular graft of claim 10, further comprising:  
a sidebranch graft connectable to an opening formed through the outer graft wall and the inner graft wall.

19. The fenestrated endovascular graft of claim 18, wherein the sidebranch graft has a flange configured to form a fluidtight connection to the opening through the outer graft wall and the inner graft wall and an expandable anchor configured to form a fluidtight seal with a branch vessel.

21. The fenestrated endovascular graft of claim 10, wherein the guidewire includes a rearwardly-facing piercing element.

22. The fenestrated endovascular graft of claim 21, wherein the kit further comprises a catheter for introducing the guidewire into the patient's blood vessel.